

Palms generally rank among the most important tropical plants, and along the Amazon and its tributaries, especially near the embouchure, they form such prominent objects in the landscape that all voyagers make special mention of their luxuriance and variety. Dr. Huber devotes a number of plates to different species. *Phytelephas microcarpa*, that yields vegetable ivory, the Tucuma and Mumbaca palms, both species of *Astrocaryum*, the Javary, another species of the same genus, bearing spines on the young trunks, and the Bussu, *Manicaria saccifera*, producing huge, almost entire, leaves, are illustrated in the first two parts. No less interesting are *Cocos inajas*, with pinnæ arranged in bundles on the leaves, the Baccaba or wine-palm, *Oenocarpus distichus*, remarkable for the distichous arrangement of the leaves, and the Urucury, *Attalea excelsa*, which provides the *Seringueiro*, or rubber collector, with nuts used in smoking the rubber. Of trees other than palms, the famous Para rubber tree, *Hevea brasiliensis*, *Dipteryx odorata*, the source of the Tonca bean of commerce, *Bertholletia excelsa*, the superb tree yielding brazil-nuts, and the magnificent *Caryocar villosum* are selected for representation.

Dr. Huber has also chosen some illustrations of typical plant formations, including the littoral vegetation on the river Couany, where the Aninga, *Montrichardia aborescens*, is growing on the shore; scenes from some of the tidal creeks or channels known as "igarapés"; plant formations occurring in inundated localities, showing in one case a fine development of *Ipomoea fistulosa*, in another a wide expanse of *Panicum amplexicaule*; and a view of an Indian plantation with manioc and sugar-cane in the foreground, and the characteristic Imbauba, *Cecropia peltata*, beyond.

The illustrations are admirable, owing to the care that has been exercised in selecting fine specimens and suitable situations from which the characteristic features of the plants can be brought into the photographs.

Cams, and the Principles of their Construction. By George Jepson. Pp. 60. (New York: D. van Nostrand Co.) Price 8s. net.

IN this work examples are given of the design of cams of various types, including cylindrical, conical, face, and spherical cams, and of different degrees of complexity, from the simple heart-shaped cam employed in winding bobbins to the writing cam with the differential motions of paper and style. The illustrative drawings are accurately and beautifully executed, the construction lines being printed in red ink for the sake of extra clearness. It is shown how to design the profile of a cam so as to give a simple harmonic motion or a uniform acceleration and retardation to the follower, thereby effecting a change of position of the latter with a minimum wear and tear. The book is a welcome addition to the somewhat scanty literature on the subject.

Rivetage. By M. Fricker. Pp. 168. (Paris: Gauthier-Villars and Masson et Cie., n.d.)

THIS little volume belongs to the "Encyclopédie scientifique des Aide-mémoire" series, to which attention has often been directed in these columns. It is divided into two parts; the first passes in review the rules—for the most part empirical—which are adopted in determining the dimensions of rivets and in riveting generally, and the second describes the methods which are employed in the actual processes of riveting.

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LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

A New Mud-Volcano Island.

ADMIRAL FIELD's letter in NATURE of February 28, embodying Commander Beauchamp's description of a new island recently discovered by him about nine miles north-west of Cheduba (not Chebuda) Island, off the coast of Arakan, leaves no room for doubt that the island in question was due to the eruption of a submarine mud volcano.

Ramri and Cheduba, together with the adjacent subordinate islands, are composed mainly of shale and sandstone (probably of Tertiary age), containing some coal, and also very considerable quantities of petroleum, accompanied by inflammable gas. There is evidence of a certain degree of abnormal subterranean heat, although such is far lower than that associated with true volcanoes, which do not exist, nor have any volcanic rocks been observed. Mud volcanoes are fairly numerous, which, besides emissions of a quieter character, are subject, at uncertain intervals, to violent paroxysmal eruptions. At such times mud and stones are shot out with great force and noise, accompanied by large quantities of inflammable gas, which in many cases catches fire, and gives rise to a volume of flame that lights up the country for miles around. There are numerous well-authenticated descriptions of such occurrences, more than one of which were submarine. The stones ejected are all derived from the stratified rocks mentioned above, the shales furnishing the source of the mud. Electric sparks, produced by the friction of the ejecta amongst themselves, probably cause the ignition of the gas. Some of the recorded paroxysms were synchronous with earthquakes.

A somewhat detailed account of the mud volcanoes may be found in the "Records of the Geological Survey of India," vol. xi. (1878), pp. 188-207, and descriptions of several later eruptions in subsequent volumes.

Ealing.

F. R. MALLET.

A New Chemical Test for Strength in Wheat.

THE principle of the test for strength in wheat flour described as new by Mr. T. B. Wood in a recent issue of NATURE (February 21), and further claimed by Dr. E. Frankland Armstrong (NATURE, March 7) as having been in regular use in his laboratory during the past year, was employed by me more than four years ago, and still forms an important factor in my physicochemical method of gauging the baking qualities of wheat flour.

I can fully corroborate Mr. Wood's opinion that no single factor is capable of measuring the strength value of wheat, and Dr. Armstrong's statement that the problem is one in which no small number of variables must be dealt with.

In 1905 Mr. A. E. Humphries supplied me with five samples as tests of the accuracy of my system as then elaborated. I was, however, not successful; but, on receiving Mr. Humphries' views of their baking qualities, the cause of my failure was at once apparent. When investigating the relation of chemical composition to baking qualities, I had relied for the latter data upon loaves baked in tins, whilst Mr. Humphries based his opinions upon self-supporting loaves of the "cottage" type. It thus became evident that it was necessary to view the analytical data from a standpoint suited to a definite system or method of baking. That different systems of baking require different types of flour explains why millers occasionally receive both commendatory and condemnatory remarks from their customers on the quality of the same blend of flours.

I hope soon to have an opportunity of publishing some of the results of my investigations of the correlated factors determining the blending qualities, strength, and texture properties of wheat flour.

After a very lengthy investigation of the biochemical changes which occur in the natural ripening of the wheat berry, its preparation or "conditioning" in the mill, and the influence of variations in the treatment of the resulting flour in the bakehouse, I am fully convinced that it is no longer the bakehouse that has to give the final verdict on the qualities of flour, as laboratory methods can now provide all the data necessary for inferring the antecedent conditions, defining the present qualities, and anticipating the future evolution of wheat or its product, flour.

A. J. BANKS.

Waterloo, Liverpool, March 11.

Ionisation and Anomalous Dispersion.

IN NATURE of February 21, Prof. Wood, referring to my letter of January 17, says that the effects observed were probably due to disturbance of the density gradient of the sodium vapour caused by "local heating by the wire." I am afraid that in my letter I cannot have described the experimental arrangement sufficiently clearly; at any rate, Prof. Wood seems to be under a mistaken impression.

The wire was merely an electrode insulated from the tube containing the sodium vapour, but connected to one pole of a battery, the other being connected to the tube. A current passed through the sodium vapour, or the nitrogen left in the tube after exhaustion and heating, presumably an ionisation current; and this was of the order of one microampere, and could hardly produce much local heating.

Be this as it may, since I left Aberystwyth my pupil, Mr. Needham, noticed an effect which, if confirmed, appears to me to be decisive in favour of a connection between ionisation and dispersion. While the tube was heated, by a flame as usual, with 10 volts there was a current of 4 divisions and an anomalous dispersion of 9 divisions. On raising the voltage to 58 volts, the current rose to 10 divisions, but the *anomalous dispersion immediately fell to zero*, and thereafter slowly increased to a value somewhat greater than before.

That an increase of current, and presumably of local heating, if there be any, should diminish the dispersion temporarily can hardly be understood, unless the systems producing the dispersion are themselves electrically charged and swept away to the electrode. I hope shortly to investigate the whole question fully, so as to decide definitely what connection, if any, exists between ionisation and dispersion.

G. A. SCHOTT.

Physical Institute, Bonn, February 26.

The Rusting of Iron.

IN NATURE of February 21 (p. 390) Prof. W. R. Dunstan states that rusting of iron takes place in the presence of water and oxygen when every trace of carbonic acid has been removed. To a certain extent this is the result obtained by our chemist, but his experiments proved conclusively that rusting must be due to an admixture of carbonic acid, for with improved precautions against its presence rusting was enormously reduced, and, this is important, confined to one or two spots. In some cases this local rusting took place where the steel samples rested on the glass vessels, and it was but natural to suppose that this local corrosion was brought about by silicic acid of the glass. The obvious precaution was to arrange an iron bowl in the centre of the glass vessel into which water could be distilled, but although this apparatus was constructed, it was not used, because if corrosion can be caused by the silica of the glass, then it may also be caused by specks of exposed slag in the iron or by the oxidised specks of manganese sulphite which can be seen with the microscope, or by other impurities. Corrosion may even be brought about by carbonic acid occluded in the iron. In order to settle the question, the experiment should be repeated with a piece of iron of absolute purity.

C. E. STROMEYER.

Manchester, March 5.

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A Problem in Chance.

THE law of probability is often illustrated by the simple method of supposing a bag filled with an equal number of white and black balls, which are presumably uniformly distributed within the bag. It is stated that the chances are equal that any extracted ball will be black or white.

I am desirous of ascertaining how this equality of extraction of either colour would be disturbed if it be assumed that the balls are not merely inert, but that there is an inherent tendency for like-coloured balls to cluster together. Two subsidiary and mutually alternative conditions may be further assumed: either the tendency of the black balls to cluster together is greater than that existing between the white balls, or it is equal. It is the former of these two subsidiary conditions that interests me.

Perhaps I may state the problem in more definite form. Assume 2000 balls, of which half shall be black and half white, placed in a bag. The intensity with which the latter tend to cluster= d , and that of the former is greater, but to a less degree than half as much again. The balls are extracted in groups of eight. In four separate extractions, what will be the probable proportion of black and white balls at each extraction? And how many extractions will have to be made before it is probable that an equal number of black and white balls will have been withdrawn?

GEO. P. MUDGE.

London Hospital Medical College.

THE UNIVERSITY OF THE CAPE OF GOOD HOPE.

ON the invitation of Sir Lauder Brunton, a meeting took place at his residence on January 21 of gentlemen interested in university education. Among those present were Sir Arthur Rücker (of the London University), Dr. Donald MacAlister (then of Cambridge University, and president of the General Medical Council), Prof. Perry (Royal College of Science), Sir W. Arbuckle (Agent-General of Natal), Sir David Gill, Sir John Buchanan, and Mr. Howard d'Egville, honorary secretary Imperial Federation (Defence) Committee. Prof. Osler (of Oxford University), Sir Norman Lockyer, K.C.B., Sir Thomas Fuller (Agent-General for Cape Colony), and Prof. Stirling, dean of the medical faculty of the Victoria University, were unfortunately prevented from attending. Copies of the proposals provisionally agreed to by the committee of University of the Cape of Good Hope, relative to the re-organisation of that University, had been circulated before the meeting, and formed the basis of the evening's discussion. The result was a consensus of opinion on several leading issues, which may be summarised as under:—

(1) That in the existing condition of South Africa the interests of the higher education of the country would best be served by the continuance of only one examining and degree-conferring university.

(2) That the conferring on single colleges in the country the power of granting degrees to their own students would be detrimental to higher education, and specially injurious to the status of all such South African graduates. Such degrees would be depreciated, not only in the estimation of the people of the country itself, but also outside the colony, and would not have the same value or consideration given them which degrees granted by one general University would receive. The tendency of multiplying degree-granting institutions in the circumstances such as those existing in South Africa would be in the direction of unhealthy competition, which would inevitably lower, and not raise, the worth of degrees so obtained.

(3) That sound education would be promoted by associating in examinations the teacher with independent examiners, but the University should control all